Washington State Department of Transportation
Bridge Preservation Dive Team

UNDERWATER INSPECTION REPORT FOR

MCNEIL IS. MOORING FLOAT

BRIDGE NO. DOC-3 **STRUCTURE ID 00200438**

Prepared For WA State Dept. of Corrections (DOC)

Inspection Date April 27, 2021

Lead Inspector/Diver Darren O. Nebergall
Cert. # G0314

Inspector/Diver James R. W. Harding

DARREN O. NEBERGALL
STATE OF WASHINGTON
40402
REGISTERED
PROFESSIONAL ENGINEER
6/2/2021

Status: Released Printed On: 5/26/2021 Agency: Other State Agencies

CD Guid: 213e37d7-658c-4328-97d8-4d0d304fb912 CD Date: 5/26/2021 Program Mgr: Evan M Grimm

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FOR THE
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STRUCTURE ID 00200438

EXECUTIVE SUMMARY

The WSDOT Bridge Preservation Dive Team performed an underwater inspection of the subject facility on April 27, 2021. Sixteen steel pipe piles and the concrete floating pontoon exterior were inspected below water by diving.

In general, the steel pipe piles that position the floating concrete pontoon (spud piles) are in fair to poor condition. The coating has failed in large areas where the pontoon keeper chains abrade directly on the piles. This was most evident in the lower intertidal zone (ITZ) where the steel/UHMW rub strips have failed. Some of these locations have holed thru the pile wall due to the chains rubbing on the pile. Ultrasonic thickness measurements were taken in other locations and minor section losses were noted. Minor section losses are not a structural concern due to the piles being for pontoon positioning only, however holed thru piles may be susceptible to failing in extreme wind and wave event and should be monitored for buckling during such events.

Repair recommendations include repairing or replacing spud piles that have holes in them (REPAIR #10005 & #10007) which are susceptible to failing during extreme weather events. Recommend retaining the 48-month frequency for underwater inspections.

Washington State Department of Transportation

Daily Site Dive Log

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Inspector Darren O. Nebergall **Date** 4/27/2021

Bridge No. DOC-3 **Bridge Name** MCNEIL IS. MOORING FLOAT

Bridge Type **Waterway Name** PUGET SOUND

Dive Objective Inspection of submerged substructure elements.

Diving Operation

Type of Operation ☐ SCUBA ☑ Surface Supplied Air ☐ Snorkel ☐ ROV ☐ Other

Equipment

Suit Dry suit

Air Supply Surface Supplied

Site Access Munson dive boat - launched from Zittel's Marina

Inspection Tools GoPro camera, D-meter thickness gauge, hammer/scraper

Conditions

Water ☑ Salt ☐ Fresh ☐ Brackish Temperature 48 °F Visibility 10 ft

Surface ☑ Calm ☐ Choppy ☐ Rough

Tide ☐ High ☑ Low ☐ Flood ☑ Ebb ☐ N/A

Current ☐ Fast ☐ Moderate ☑ Slow Velocity < 0.5 ft/sec

Weather ☐ Clear ☑ Cloudy ☐ Overcast ☐ Rain ☐ Windy Air Temp 52 °F

Diver Checks

☑ First Aid Equipment on Site
☑ Communication for EMS
☑ Dive Gear Inspected
☑ Air Source Checked
☑ Pre-Activity Safety Plan Reviewed
☑ COVID-19 requirements.
☑ Physical Condition of Diver(s) Checked
☑ Communications for Diver(s) Checked
☑ Team Briefed and Understands Dive Plan
☑ Special Site Hazards Noted
☑ Line-Tending Procedures Reviewed
☐

Dive Plan and Dive Team Procedures

Assess site conditions and determine type of dive operation. Hold on-site pre-dive safety meeting to discuss and plan dive operation, determine roles and responsibilities, review emergency procedures, and check physical condition of diver(s). Assemble and check dive gear. Check communication for diver(s). After completion of dive, review notes, check condition of diver(s), take soundings and photos as required.

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Dive Schedule

Dive No.	Entry Time	Exit Time	Total Time in Water	Maximum Depth	Remarks
1	09:07:00	10:35:00	01:28:00	23 fsw *	Spud pile groups and Pontoons

Dive Narrative

The team converged at Zittel's Marina and proceeded to prepare the boat and gear. A pre-activity safety plan was discussed and team roles for the inspection were decided upon. A surface-supplied air (SSA) diver operation was chosen and after the appropriate gear was loaded, the boat was launched and the team proceeded to motor east, around the southern tip of the Key Peninsula, and along the west side of Anderson Island, to the inspection location on the south side of McNeil Island. The boat was moored to the concrete pontoon floats, and after making contact with DOC personnel on-site, the diver was geared up and checked. The diver splashed and began the inspection at Spud Pile Group 1 at the west inshore end of the floats, and proceeded around to Groups 2, 3, and 4. The bottom and sides of the concrete pontoon floats were also given a swim-by inspection, although heavy marine growth impaired the visual inspection. Notes and findings were relayed to support personnel on the dive boat via hardwired communications in the umbilical. Depths and photos were taken as necessary. Passenger ferry boat traffic was monitored to ensure the safety of the diver during boat arrivals and departures. Once all underwater elements had been inspected, the diver was recovered to the boat, where his physical condition was checked. All notes and photos were reviewed for completeness prior to leaving the site.

* fsw = feet sea water

Dive Diver Air IN/OUT (psig)
1 JRWH 2475/1900

Dive Team Members

Darren Nebergall, P.E. (DON)	Inspector / Notes / Stand-by diver
(Name)	(Role)
Jim Harding, P.E. (JRWH)	Inspector / Diver
(Name)	(Role)
Richard Pawelka, P.E. (RMP)	DPIC
(Name)	(Role)

Washington State Department of Transportation

Underwater Inspection Report

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Inspector	Darren O. Nebergall	**Agency/Owner**	WA State Dept. of Corrections (DOC)	**Date**	4/27/2021
Bridge No.	DOC-3	**Bridge Name**	MCNEIL IS. MOORING FLOAT		
Bridge Type		**Waterway Name**	PUGET SOUND		
Substructure	Steel Pipe Piles	**Foundation**	Steel Pipe Piles		
No. Spans	1	**No. Piers Dived**	4	**Inspection Hours**	2.0

4 [ ] Substructure Condition (1676) 8 [ ] Chan/Protection (1677) T [ ] Scour Code (1680)

BMS Elements

Element	Element Description	Total	Units	State 1	State 2	State 3	State 4
8361	Scour	4	EA	4	0	0	0
8701	Ferry Concrete Floating Pontoon	13	CELL	4	3	2	4
8703	Spud Piling & Wells	16	EA	1	0	9	6
8902	Protective Coating - Piling	2300	SF	1595	100	605	0

Notes

1676	SUBSTRUCTURE: Substructure moved to a coding of '4', due to as of yet unknown water infiltration rates into pontoon cells (see note 8701).
1677	CHANNEL: This structure abuts another structure and does not connect to the shoreline directly. No bank issues noted. No restrictions to water flow past the structure.
1680	SCOUR: Structure is in tidal waters with weak and variable tidal currents. Scour code set to "T - tidal" and is considered a low risk for scour. See note 8361.
8361	SCOUR (Field): There are four spud pile groups. Underwater Inspection Findings (2021): Water flow is tidal. No scour patterns or scour countermeasures were observed around the float or spud piles.

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Notes (Continued)

8701 FERRY CONCRETE FLOATING PONTOON:
The floating dock consists of the main float with eight cells, and two flanker pontoons with two and three cells, for a total of 13 cells.

INTERIOR:
All eight of the of the main pontoon cells were entered during the 2017 inspection (see layout sheet for cell numbering) (photos #7 and #8).

WATER DEPTH TRACKING (T = some ponding to <1" deep, D = Dry)

DATE	CELL	1	2	3	4	5	6	7	8
5/21/2013		T	T	2-1/2"	1"	T	D	D	T
4/20/2015	- cell hatches not opened in 2015								
4/25/2017		1-1/2"	4"	1"	1-1/4"	1-1/2"	D	D	1-1/2"
4/08/2019	- cell hatches not opened in 2019								

2017: Cells 2, 4, 5, and 8 are in Condition State 4 (CS4) due to water presence as well as statements made by DOC employees concerning pumping of pontoons. Leaks were not found, source of water may be seepage through the hatches.
Cells 1 and 3 are in CS3 due to presence and depth of water.
Pumping records are needed. REPAIR #10006.

EXTERIOR:
The offshore exterior top edge has many concrete patches. Cells 6 and 7 are in CS2 due to these patches.
Boat fender bumpers are in fair condition, many have had repairs (photo #24).
The right flanker fender bracket at the right shore side corner has pulled out hold down bolts (photos #29 & #30). REPAIR #10004.
Four corner water depth taken on the main float found to be approximately level. Water was not calm during 2017 and 2019 readings.

FLOATER FOUR CORNER DRAFT MEASUREMENTS

DATE	CORNER --- OFFSHORE RT	--- OFFSHORE LT	--- SHORE RT	--- SHORE LT
4/20/2015	28-5/8"	29"	26-1/2"	26-3/4"
4/25/2017	29"	28"	26"	27"
4/08/2019	27"	27.5"	26"	25"

FLANKER PONTOON:
The left flanker pontoon patched spall in the right exterior wall (CS2) (photo #26).

Underwater Inspection Findings (2021):
The concrete pontoon surfaces below water are typically about 90% covered in marine growth up to 1.5-ft. thick. Spot cleaning of growth revealed no defects in the underlaying concrete.

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Notes (Continued)

8703 SPUD PILING & WELLS:
The Steel Spud Piles adjacent to the concrete float are showing their age. The piles are attached to the float via a chain. The tides and wave action move the chain up and down on the pile. The piles have steel backer plates with missing UHMW sheeting. There are locations of wear on the exposed structural surface.
Pile SP1-A has a dime sized hole from chain wear (photo #16).
Spud pile group SP2 has failing UHMW protection with steel backer plates remaining, typical for spud piles (photo #17).
Spud pile SP2-B has heavy rusting and section loss at the high side of the tidal zone (photo #18).
Spud pile SP3-D has a horizontal crack across a butt weld several feet below the high water mark (CS4) (photo #27). REPAIR #10005.
Pile Inspection Data Sheets have 9 piles in CS3 due to minor section loss and 5 additional piles in CS4 due to holes in piling (6 total).

Underwater Inspection Findings (2021):
The steel pipe pile spuds are in generally fair to poor condition underwater with some areas showing more advanced deterioration. Coating failure with corrosion and steel section losses including holed thru piles were the most common defects noted. Thickness measurements of the steel were taken in localized areas of corrosion and pitting as well as in good areas for comparison (photo #UW-6). The most extreme cases of section losses are typically in the spud piles closest to the floats that have keeper chains around them (photo #UW-5). The majority of the rub strips have failed in the lower intertidal zone (ITZ) and the chains rub directly on the pile causing large areas of corrosion and section loss, including holes worn thru the pile wall from chain fretting. Minor section losses (CS3) are not a structural concern since the spud piles are for pontoon positioning only. However piles with holes may be susceptible to failure during extreme events such as heavy wind/wave events (CS4), and should be repaired or replaced REPAIR #10007.
See attached Layout drawing and Pile Inspection Data Sheets for additional photo references and location/defect information.

8902 INORGANIC ZINC VINYL/PAINT:
The spud piles have rust blooms in the intertidal zone (photo #15).

Underwater Inspection Findings (2021):
The spud pile coating is largely failed in the intertidal zone (ITZ) mainly from pontoon positioning chains rubbing directly on the piles (photo #UW-3). Underwater coating condition below the ITZ is largely intact with only about 5%-10% of the pile surface area showing corrosion on most piling (photo #UW-7).

Repairs

Repair No	Pr	R	Repair Description	BMS	Noted	Maint	Verified
10004	1	B	Right flanker pontoon fender bracket at the right shore side corner has pulled out hold down bolts. Refasten anchor bolts to pontoon.	8701	4/8/2019		
10005	1	B	Spud pile SP3-D has a horizontal crack across a butt weld several feet below the high water mark. Weld cover plate over crack or replace pile.	8703	4/8/2019		

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No. Spans	1	**No. Piers Dived**	4	**Inspection Hours**	2.0

Repairs (Continued)

Repair No	Pr	R	Repair Description	BMS	Noted	Maint	Verified
10006	2	B	Pumping records of the float cells should be recorded and tracked. This should include cell # (see layout sheet), date, and depth of water removed. Infiltration rates can be tracked and used for future repair work scheduling.	8701	4/8/2019		
10007	1	B	The following Spud Piles have holes in the pile wall and are suseptable to failure during extreme wind/wave events: SP1-A, SP1-D, SP3-B, SP3-C, and SP4-A These piles should be repaired (if possible) or replaced.	8703	4/27/2021		

Inspections Performed and Resources Required

Report Type	Date	Freq	Hrs	Insp	CertNo	Coinsp	Note
Underwater	4/27/2021	48	2.0	DON	G0314	JRWH	Underwater inspection by WSDOT Dive Team. Frequency set at 48 months to correspond with every-other routine inspection.

Resources	Hours	Min	Pref	Max	Freq	Date	Need Date	Override	Notes
Boat		O	M	M					Used Munson dive boat for 2021. Launched from Zittel's Marina.

Report Type	Date	Freq	Hrs	Insp	CertNo	Coinsp	Note
Primary Safety	4/8/2019	24	1.0	JHL	D2016	CRT	

Resources	Hours	Min	Pref	Max	Freq	Date	Need Date	Override	Notes
Boat			D						Boat needed for inspection. Kvichek boat used during 2019 inspection.
Special Equipment									Enter the eight float cells with an electronic winch on a tripod provided by DOC maintenance personnel. Harness and air monitor is required. Last done in 2017, DOC enters these on a regular basis, inspect in 2021. Arrange with Greg Buikema.
Third Party Notification									Schedule inspection with Greg Buikema (DOC) 253-328-3229 or 253-588-5281 (cell). A security clearance must be done for all inspectors prior to landing on the island. This can be done via Greg, provide full name, SS#, and date of birth (DOB).

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Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

SI-7

8701 Ferry Concrete Floating Pontoon

Photo Type: G - General

Orientation: Shore

Date: 5/21/2013

Repairs:

Cell entry via tripod with winch.

SI-8

8701 Ferry Concrete Floating Pontoon

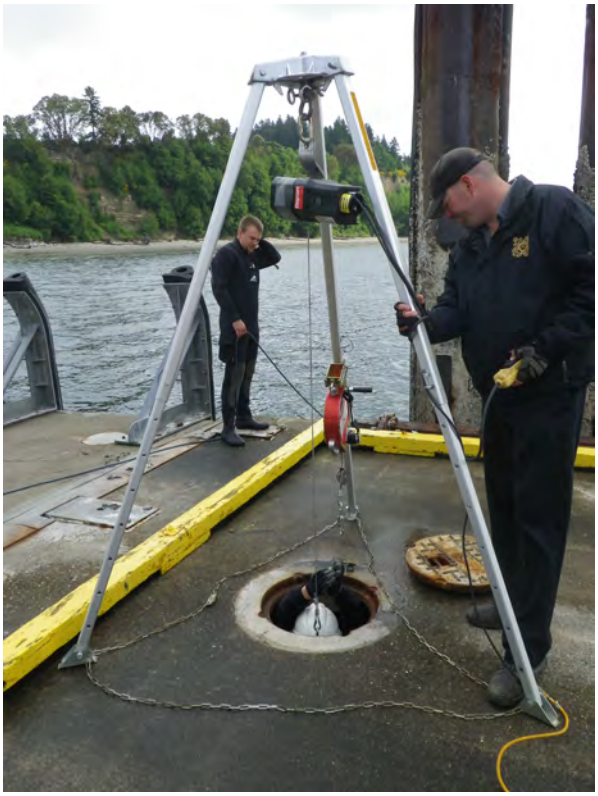
Photo Type: G - General

Orientation: Shore

Date: 5/21/2013

Repairs:

Cell entry via tripod with winch.



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Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

SI-24

8701 Ferry Concrete Floating Pontoon

Photo Type: G - General

Orientation: Left

Date: 5/3/2017

Repairs:

Most of the fender brackets have been repaired or replaced.

SI-29

8701 Ferry Concrete Floating Pontoon

Photo Type: R - Repair

Orientation: Sea

Date: 4/8/2019

Repairs: 10004

Right flanker pontoon fender bracket at the right shore side corner has pulled out hold down bolts.

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SI-30

8701 Ferry Concrete Floating Pontoon

Photo Type: R - Repair

Orientation: Sea

Date: 4/8/2019

Repairs: 10004

Right flanker pontoon fender bracket at the right shore side corner has pulled out hold down bolts.

SI-26

8701 Ferry Concrete Floating Pontoon

Photo Type: G - General

Orientation: Left

Date: 5/3/2017

Repairs:

Left flanker pontoon has been repaired.

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Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

SI-16

8703 Spud Piling & Wells

Photo Type: G - General

Orientation: Left

Date: 4/22/2015

Repairs:

Pile SP1-A has a dime sized hole from chain wear (upper ITZ).

SI-17

8703 Spud Piling & Wells

Photo Type: G - General

Orientation: Left

Date: 4/22/2015

Repairs:

Spud pile group SP2 has failing UHMW protection with steel backer plates remaining, typical for spud piles.

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Intersecting PUGET SOUND **Route Under** **Mile Post**

SI-18

8703 Spud Piling & Wells

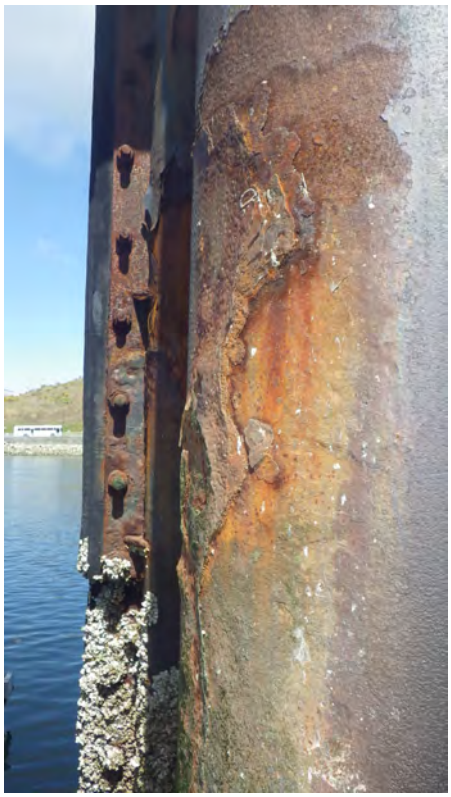
Photo Type: G - General

Orientation: Shore

Date: 4/22/2015

Repairs:

Spud pile SP2-B has heavy rusting and section loss at the high side of the tidal zone.



SI-27

8703 Spud Piling & Wells

Photo Type: R - Repair

Orientation: Left

Date: 4/8/2019

Repairs: 10005

Spud Pile SP3-D is cracked at a butt splice.

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UW-6

8703 Spud Piling & Wells

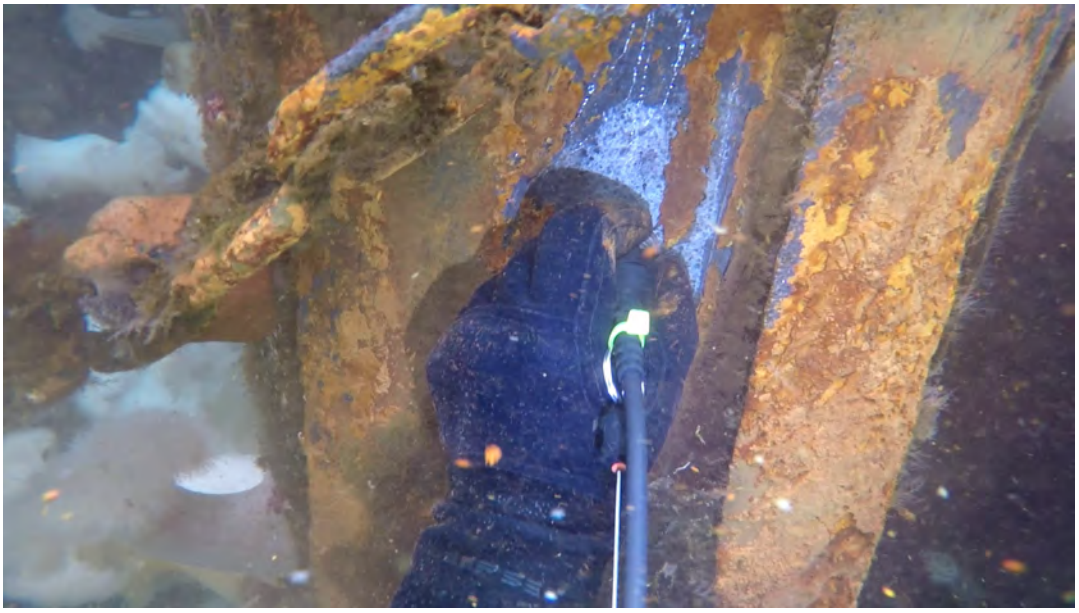
Photo Type: G - General

Orientation:

Date: 4/25/2017

Repairs:

Using D-meter thickness gauge to measure pile section thicknesses.



UW-5

8703 Spud Piling & Wells

Photo Type: G - General

Orientation:

Date: 4/25/2017

Repairs: 10007

Keeper chains fret directly on spud piles in the lower ITZ, causing holes in some locations.

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UW-8

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: SE

Date: 4/27/2021

Repairs: 10007

Spud Pile SP1-A holed thru from keeper chain fretting.

UW-9

8703 Spud Piling & Wells

Photo Type: G - General

Orientation:

Date: 4/27/2021

Repairs:

Most spud piles have good coating below the ITZ. Pile SP1-B shown near mudline (MDL).

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UW-10

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation:

Date: 4/27/2021

Repairs:

Localized deep pitting in Pile SP1-C; typical of other piles in localized areas.

UW-11

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: SE

Date: 4/27/2021

Repairs: 10007

Spud Pile SP1-D holed thru near mudline.

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UW-12

8703 Spud Piling & Wells

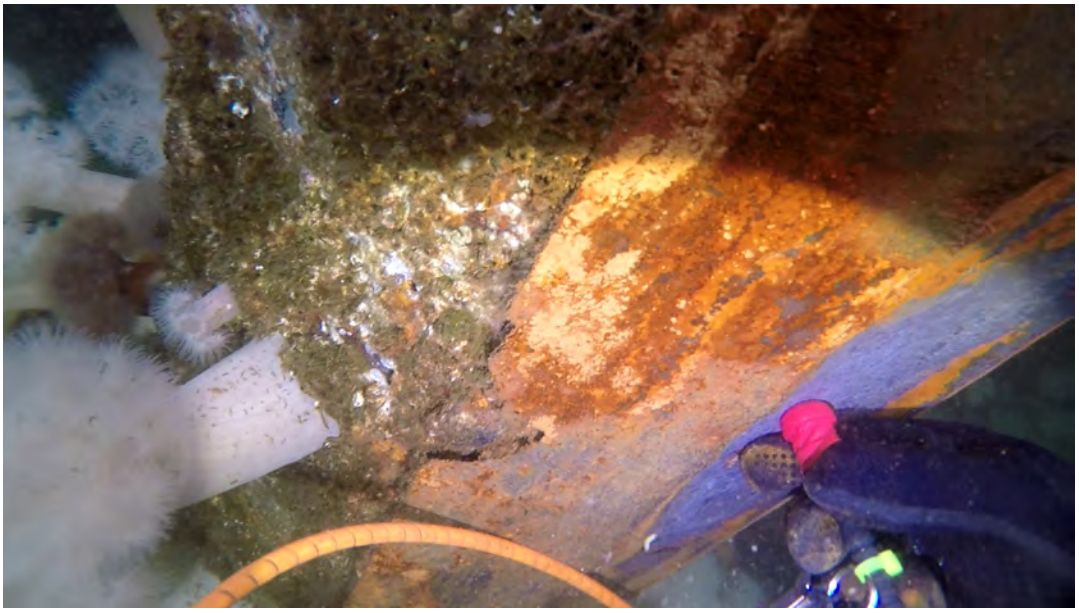
Photo Type: I - In Depth

Orientation: DN

Date: 4/27/2021

Repairs:

Heavy corrosion and section loss in SP2-A from chain fretting. Only about 1/8" section remaining in this location.



UW-13

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: W

Date: 4/27/2021

Repairs: 10007

Spud Pile SP3-B holed thru at MDL+4

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UW-14

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: W

Date: 4/27/2021

Repairs: 10007

Spud Pile SP3-C deeper pits holed thru at MDL+4

UW-15

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: NW

Date: 4/27/2021

Repairs: 10007

Spud Pile SP4-A holed thru in the ITZ from chain fretting.

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UW-16

8703 Spud Piling & Wells

Photo Type: I - In Depth

Orientation: W

Date: 4/27/2021

Repairs:

Localized deep pitting near MDL in Spud Pile SP4-B.

UW-17

8703 Spud Piling & Wells

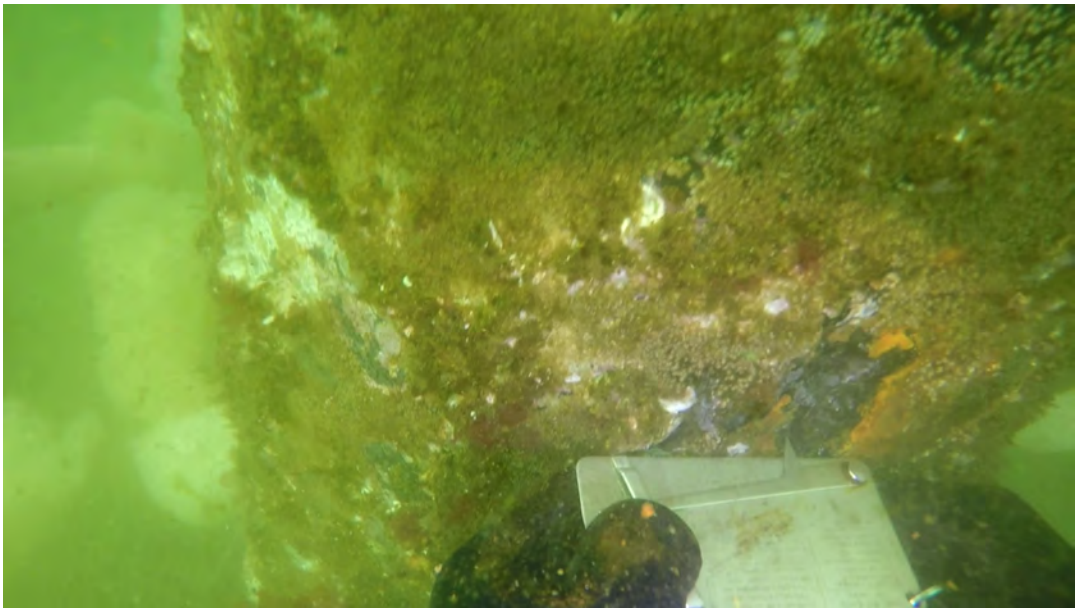
Photo Type: I - In Depth

Orientation:

Date: 4/27/2021

Repairs:

Spud Pile SP4-C deep pits mid-height.



Status: Released | Printed On: 7/8/2021 | Agency: Other State Agencies

CD Guid: 213e37d7-658c-4328-97d8-4d0d304fb912 | Release Date: 5/26/2021 | Program Mgr: Evan M Grimm

Br. No. DOC-3 **SID** 00200438 **Br. Name** MCNEIL IS. MOORING FLOAT

Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

SI-15

8902 Inorganic Zinc Vinyl Paint

Photo Type: G - General

Orientation: Left

Date: 5/21/2013

Repairs:

Spud pile paint has many rust blooms.

UW-3

8902 Inorganic Zinc Vinyl Paint

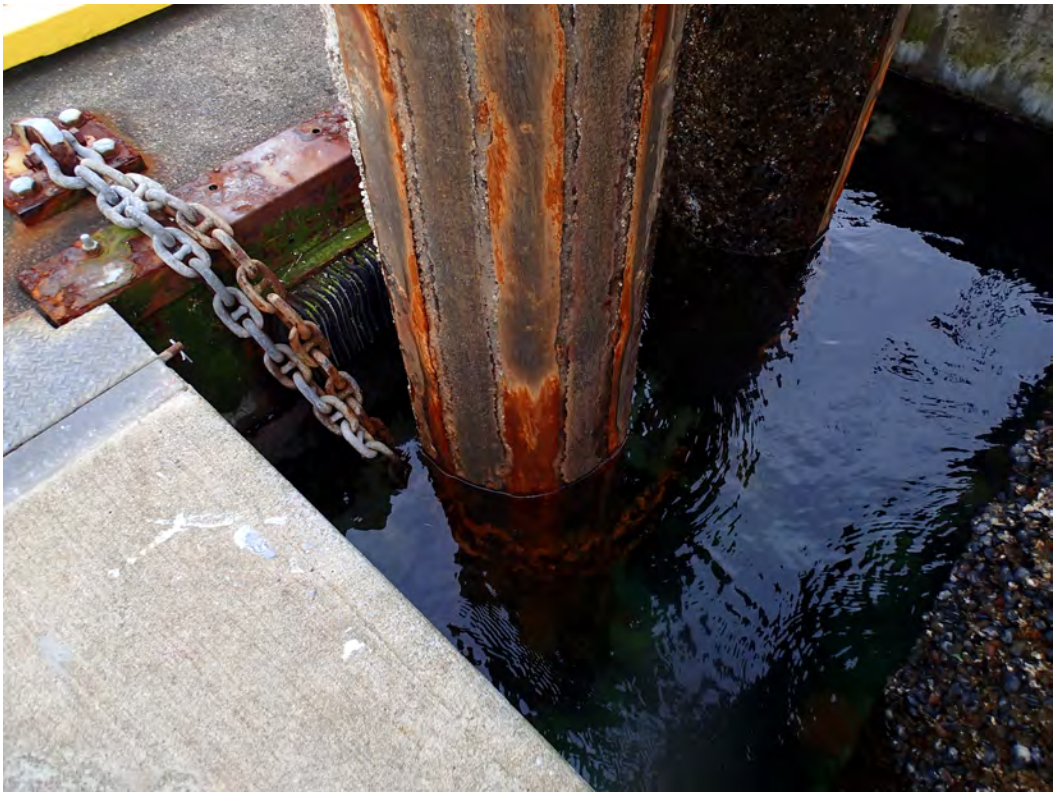
Photo Type: G - General

Orientation: DN

Date: 4/25/2017

Repairs:

Typical spud pile condition in the upper intertidal zone (ITZ)



Status: Released | Printed On: 7/8/2021 | Agency: Other State Agencies

CD Guid: 213e37d7-658c-4328-97d8-4d0d304fb912 | Release Date: 5/26/2021 | Program Mgr: Evan M Grimm

Br. No. DOC-3 **SID** 00200438 **Br. Name** MCNEIL IS. MOORING FLOAT

Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

UW-7

8902 Inorganic Zinc Vinyl Paint

Photo Type: I - In Depth

Orientation: DN

Date: 5/21/2013

Repairs:

5%-10% coating failure with rusting.
SP4-B shown; typical of other piles.

Status: Released | Printed On: 7/8/2021 | Agency: Other State Agencies

CD Guid: 213e37d7-658c-4328-97d8-4d0d304fb912 | Release Date: 5/26/2021 | Program Mgr: Evan M Grimm

Br. No. DOC-3 **SID** 00200438 **Br. Name** MCNEIL IS. MOORING FLOAT

Carrying **Route On** 10210 **Mile Post** 5.96

Intersecting PUGET SOUND **Route Under** **Mile Post**

Washington State Department of Transportation

McNeil Island Floating Dock
DOC-3 / SID 00200438
Pile Inspection Data Sheets

Underwater	4/27/2021	Lead:	DON	Co:	JRWH		
Routine	4/8/2019	Lead:	JHL	Co:	CRT		

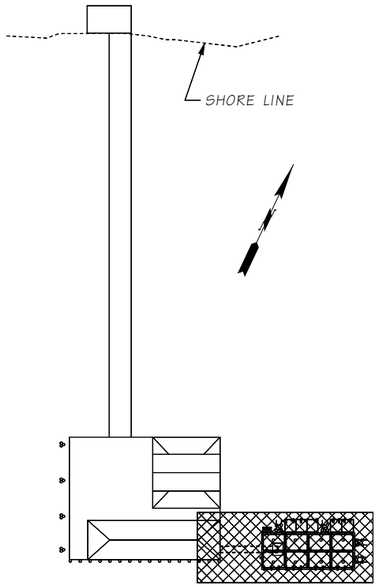
Pile Location		Condition/Damage				Inspection Type	
Bent	Pile	Pile Type	Cond. State	Elevation	Details/Remarks	Routine/UW	Date
PILE INSPECTION DATA - Spud Pile Groups							
SP1	A	Steel	CS4	MDL+2 MDL+13 to +16 ITZ	Thickness = 0.485" (2021) 3'(h) x 2"(w) hole thru pile @4:00 from chain fretting (Photo #UW-8). Dime-sized hole in upper ITZ @3:00 from chain wear. Up to 50% coating failure where UHMW/steel chain standoffs have failed; chains rub/fret directly on piling especially in the lower ITZ (typical condition on piles adjacent to floats).	UW	4/27/2021
	B	Steel	CS3	MDL+1 MDL+13 ITZ	Thickness = 0.480" (2021). Coating looks good near MDL (Photo #UW-9). Up to 3/16" deep pits @7:00 in larger 3'(h) x 4"(w) area of section loss from chain fretting. Thickness in good area adjacent = 0.485"(2021) Up to 50% coating failure where UHMW/steel chain standoffs have failed; chains rub/fret directly on piling especially in the lower ITZ.	UW	4/27/2021
	C	Steel	CS3	MDL+2 MDL+3 ITZ	Thickness = 0.485" (2017) 1" dia. localized pit @1:00; 0.41" deep. Thickness = 0.480"(2021) in adjacent good area. Typical of other areas of localized deep pitting (Photo #UW-10). 5%-10% area general coating loss/failure.	UW	4/27/2021
	D	Steel	CS4	MDL MDL+1 MDL+2 ITZ	3"(h) x 5"(w) hole thru pile @4:00 (Photo #UW-11). Thickness = 0.490" (2021) in adjacent good area. 3/4" dia. pits up to 0.25" deep in Level II cleaned area @4:00 Thickness 0.490" (2013). 5%-10% area general coating loss/failure.	UW	4/27/2021
SP2	A	Steel	CS3	MDL+1 MDL to MDL+1.5 ITZ	Thickness = 0.495" (2021) 18"(h) x 9"(w) area of coating failure with pitting up to 3/8" deep @2:30 Up to 50% coating failure and heavy corrosion from chain fretting (Photo #UW-12). Thickness readings were 0.130" & 0.270" in fretted area (2021).	UW	4/27/2021
	B	Steel	CS3	MDL+1 ITZ	Thickness = 0.480" (2021) 10% area general coating loss/failure. Pontoon chains are fretting on pile and causing heavy corrosion and section loss. Thickness readings were 0.300" & 0.340" in fretted area from 6:00-9:00 (2021)	UW	4/27/2021
	C	Steel	CS3	MDL+1 MDL+3 ITZ	Thickness = 0.515" (2013) Thickness = 0.480" (2021). Small dia. pitting up to 3/8" deep @ 6:00 5%-10% area general coating loss/failure.	UW	4/27/2021
	D	Steel	CS1	MDL ITZ	Thickness = 0.510" (2021) 5%-10% area general coating loss/failure.	UW	4/27/2021

Underwater		**4/27/2021**	**Lead:**	**DON**	**Co:**	**JRWH**		
Routine		**4/8/2019**	**Lead:**	**JHL**	**Co:**	**CRT**		
Pile Location		Condition/Damage					Inspection Type	
Bent	Pile	Pile Type	Cond. State	Elevation		Details/Remarks	Routine/UW	Date
SP3	A	Steel	CS3	MDL+1 ITZ		Thickness = 0.500" (2013); 0.500" (2021) 5%-10% area general coating loss/failure. Pontoon chains are fretting on pile though rubbing plates are still intact. Some small localized areas of 0.25" deep pitting. Thickness = 0.225" @ MDL+18; 9:00 (2021)	UW	4/27/2021
	B	Steel	CS4	MDL+4 ITZ		3" dia. hole thru pile @ 9:00 centered in 2'(h) x 6"(w) area of corrosion (Photo #UW-13). Thickness in good area adjacent = 0.490" (2021) More general coating failure than others, with 10%-15% area coating loss/failure.	UW	4/27/2021
	C	Steel	CS4	MDL+3 MDL+4 ITZ		3" dia. pit holed thru pile @6:00. Thickness = 0.465" in adjacent good area. 1"(h) x 3"(w) hole thru pile @9:00 (Photo #UW-14); also 1" dia. pit holed thru about 4" lower. 5%-10% area general coating loss/failure.	UW	4/27/2021
	D	Steel	CS4	MDL+1 ITZ		Thickness = 0.495" (2017); 0.490" (2021). Approx. 20% area coating failure near mudline. 10% area general coating loss/failure. 3'(h) x 6"(w) area of corrosion and section loss due to chain fretting. Thickness = 0.300"(2021). Horizontal crack across butt weld several feet below high water mark (Photo #27; REPAIR #10005)	UW	4/27/2021
SP4	A	Steel	CS4	MDL+1 MDL+3 to +5 MDL+16 to +19.5 ITZ		Thickness = 0.470"(2017); 0.460"(2021). Corr. band w/ concentrated localized pitting. Hole 3.5'(h) x 4"(w) @10:00 centered in larger corrosion band (Photo #UW-15). 10% area general coating loss/failure. Pontoon chains are fretting on pile.	UW	4/27/2021
	B	Steel	CS3	MDL MDL+1 ITZ		Photo #UW-7 shows typical coating condition near mudline. Thickness = 0.515"(2021) in good coating area. Localized pits up to 0.280" deep around 9:00 (Photo #UW-16) 5%-10% area general coating loss/failure.	UW	4/27/2021
	C	Steel	CS3	MDL MDL+5 ITZ		Thickness 0.515"/0.260" (good/bad)(2013). Deeper pitting up to 0.350" deep (Photo #UW-17). Thickness = 0.505" in adjacent good area (2021). 5%-10% area general coating loss/failure.	UW	4/27/2021
	D	Steel	CS3	MDL+1 MDL+5 to +6 ITZ		Thickness = 0.510" (2021). Corr. band w/ concentrated localized pitting. 5%-10% area general coating loss/failure. UHMW/Steel stand-offs mainly intact and protecting pile from chain fretting.	UW	4/27/2021

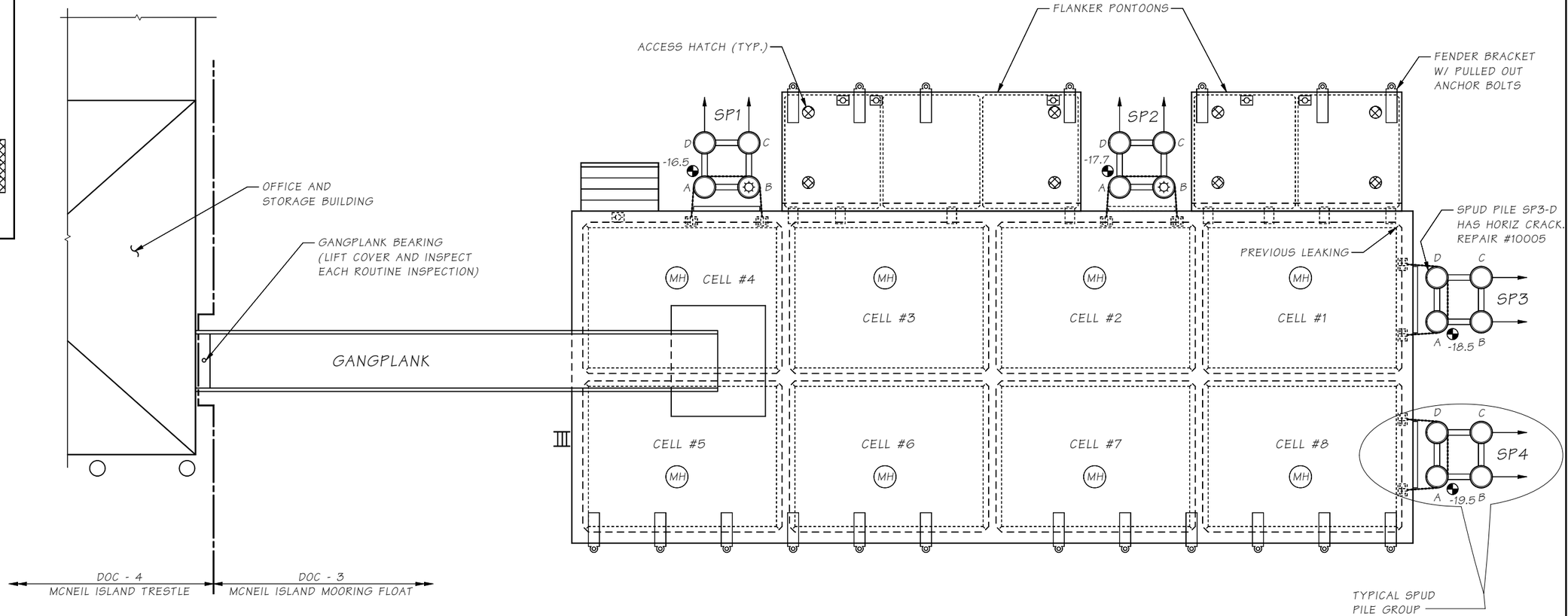
Washington State Department of Transportation

McNeil Island Floating Dock
DOC-3 / SID 00200438
Pile Inspection Data Sheets

Underwater		**4/27/2021**	**Lead:**	**DON**	**Co:**	**JRWH**		
Routine		**4/8/2019**	**Lead:**	**JHL**	**Co:**	**CRT**		
Pile Location		Condition/Damage					Inspection Type	
Bent	Pile	Pile Type	Cond. State	Elevation	Details/Remarks		Routine/UW	Date
Counts								
	Steel =	16						
	CS3 =	9						
	CS4 =	6						



KEY MAP



PLAN

LEGEND:

- VERTICAL ROUND STEEL PILE
- BATTERED (br) ROUND STEEL PILE
- LUMINAIR ON PILE
- 0.0 FIELD MEASURED CHANNEL ELEVATION

	ROUTINE INSPECTION	UNDERWATER INSPECTION
Date:	4/27/2021	4/27/2021
Scale:	NA	NA
Inspected by:	LAW/ABK	DON/JRWH

WSDOT
BRIDGE PRESERVATION
OFFICE

Washington State Department of Transportation
Bridge and Structures Office

DOC - 3
MCNEIL ISLAND MOORING FLOAT

LAYOUT

SHEET NO. 1
SHEET 1 OF 1 SHEETS

Tue May 25 10:49:21 2021